User Manual,
PCIe x4 Expansion Cable Adapter

OSS-ECA-x4

Table of Contents

1. Components

1.a. Expansion cable adapter 3

1.b. Specifications 3

2. Installation Instructions

2.a. Connecting PCIe cable 4

2.b. Removing PCIe cable 4

3. Technical Information

3.a. Switch settings 5

3.b. Block diagram 6

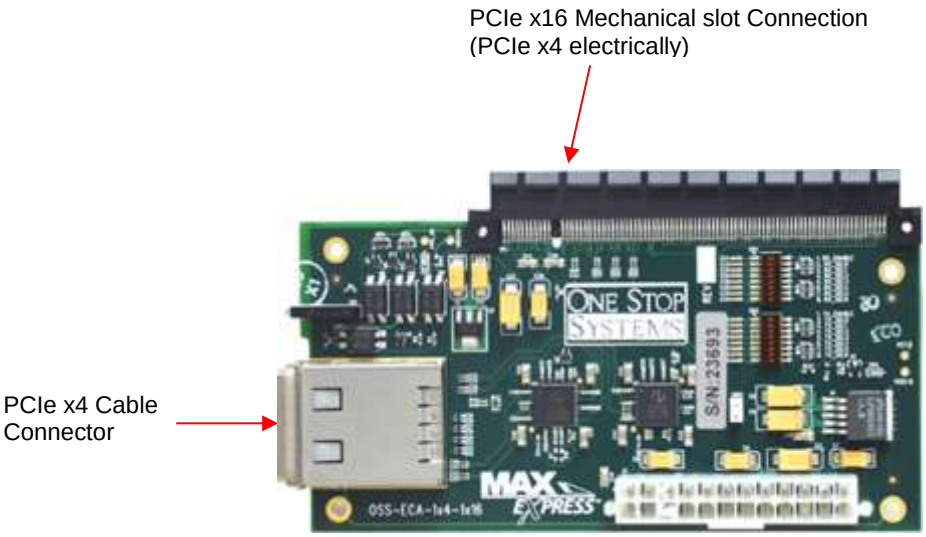
3.c. PCI Express x4 Cable Connector 7

4. Ordering Information

1. Components

1.a. Description

The expansion cable adapter is a free-standing adapter board that transfers the PCIe bus from a x4 cable connector to a x4 link slot with a x16 connector.



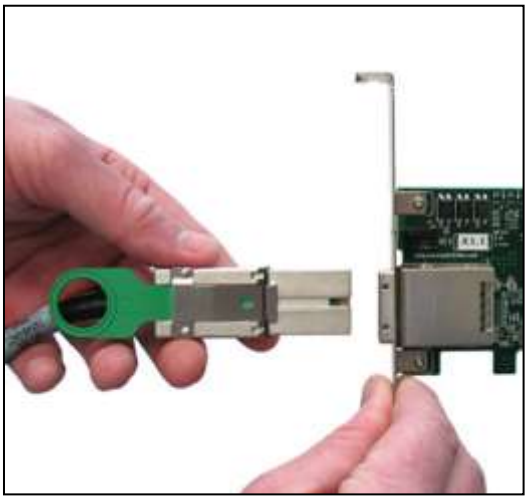
1.b. Specifications

Temperature	• Operating temp: 0° to 50°C (32° to 122°F) ambient. • Short-term (30 mins) operating temp: –5°C to 55°C ambient. • Storage temp: –40°C to 70°C.
Humidity	• Operating humidity: 10-90% @ 40°C (non-condensing). • Storage humidity: 0-95% @ 40°C (non-condensing).
Altitude	• Operating altitude: 6000 ft. at operating temperature, 15,000 ft. at operated temperature. • Storage altitude: 40,000 ft.
Vibration/Shock	• Operating vibration: 5-17 Hz 0.5" double amplitude displacement; 7-2000Hz, 1.5g acceleration • Storage/transport vibration: 2g @ 5-500 Hz. • Operating shock: 20g @ 11 msec. • Storage/transport shock: 30g @ 11 msec.

2. Installation Instructions

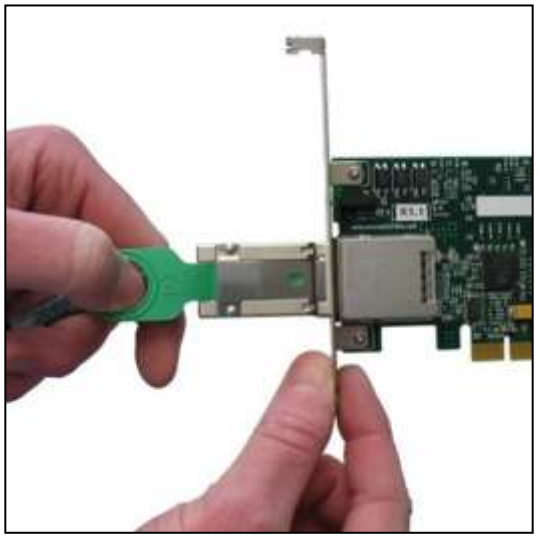
2.a. Connecting PCIe cable

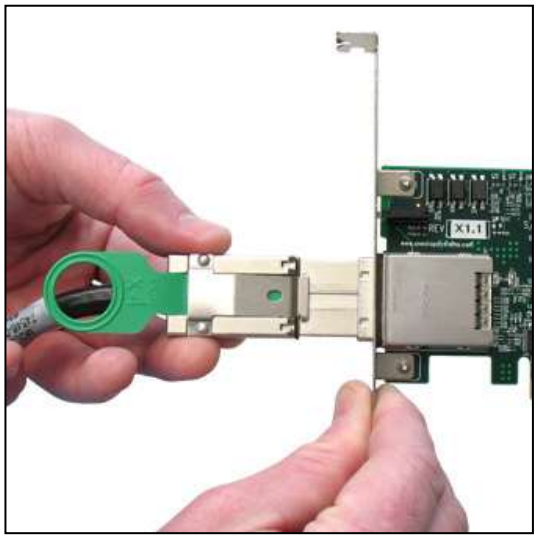
1) To install the PCIe cable, Insert into the expansion link board firmly or until you feel it lock into place.



2.b. Removing PCIe cable:

1) To remove PCIe cable pull back on green thumb tab to release metal pins and gently separate.

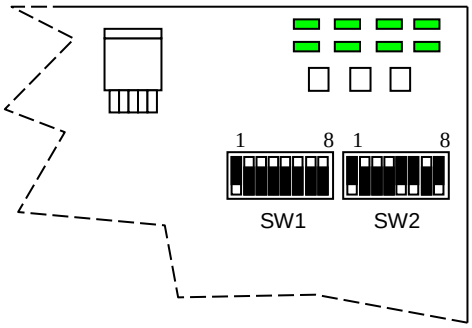


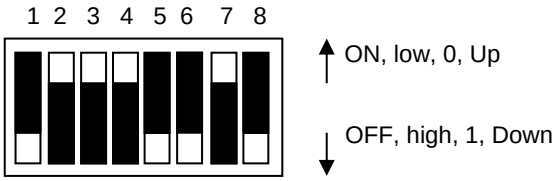


3. Technical Information

3.a. Switches settings

The OSS-ECA-x4 contains two x8 micro switches that allow configuration of the Pericom PI2EQX4401D's equalization, amplification and de-emphasis circuitry. The two switches, SW1 and SW2, are located above the Pericom devices on the front side of the PCB.





SW1 and SW2 Switch Location and Orientation

Switch SW1 Settings

Switch #	Signal Name	Default*	Comments
1	ENABLE	Down	Up = Disable all Lanes Down = Normal operation
2	RX_SEL0	Up	Rx Equalizer Selection See Table 1
3	RX_SEL1	Up	
4	RX_SEL2	Up	
5	RX_SEL3	Up	Rx Amplifier Selection See Table 2
6	RX_SEL4	Up	
7	RX_SEL5	Up	Rx De-Emphasis Selection See Table 3
8	RX_SEL6	Up	

Switch SW2 Settings

Switch #	Signal Name	Default *	Comments
1	N/C		Not connected
2	TX_SEL 0	Up	Tx Equalizer Selection See Table 1
3	TX_SEL 1	Up	
4	TX_SEL 2	Up	
5	TX_SEL 3	Down	Tx Amplifier Selection See Table 2
6	TX_SEL 4	Down	
7	TX_SEL 5	Up	Tx De-Emphasis Selection See Table 3
8	TX_SEL6	Down	

Table 1

2	3	4	Equalization
0	0	0	No Equalization
0	0	1	1.5db @ 1.25 GHz
0	1	0	2.5db @ 1.25 GHz
0	1	1	3.5db @ 1.25 GHz
1	0	0	4.5db @ 1.25 GHz
1	0	1	5.5db @ 1.25 GHz

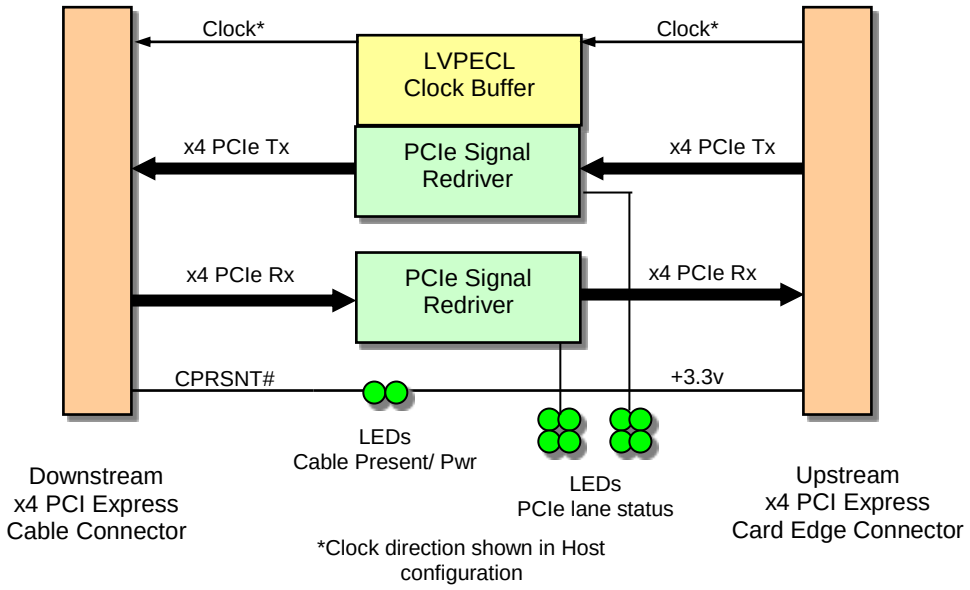
Table 2

1	1	0	5.5db @ 1.25 GHz
1	1	1	7.5db @ 1.25 GHz

5	6	Swing
0	0	1x
0	1	0.8x
1	0	1.2x
1	1	1.4x

7	8	De-emphasis
0	0	0db
0	1	-2.5db
1	0	-3.5db
1	1	-4.5db

3.b. Block Diagram



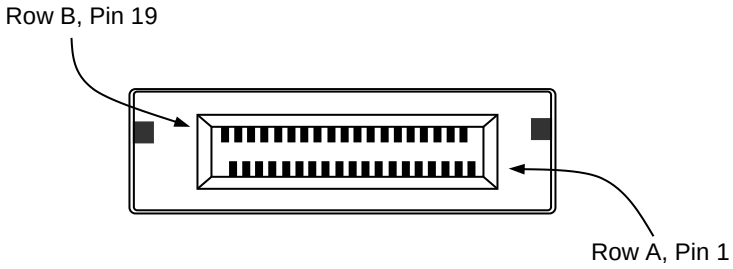
3.c. Connectors PCIe x4 Card Edge Connector

- The pins are numbered as shown with side A on the top of the centerline on the solder side of the board and side B on the bottom of the centerline on the component side of the board.
- The PCIe interface pins PETpx, PETnx, PERpx, and PERnx are named with the following convention: “PE” stands for PCIe high speed, “T” for Transmitter, “R” for Receiver, “p” for positive (+), and “n” for negative (-).
- Note that adjacent differential pairs are separated by two ground pins to manage the connector crosstalk.

PCI Express x4 Cable Connector

The PCI Express x4 connector is a 38 position edge card connector with metallic shell as defined in the PCI Express External Cabling Rev 1.0, Molex part number 75586-0010, or equivalent. On the x4 connector, the pins are recessed far back inside the EMI Housing Guide (metallic shell) and are not easily accessed.

PCI Express x4 Connector Pin Assignment



Pin #	Cable Side 1		Cable Side 2	Pin #
A1 A4 A7 A10 A13 A16 B1 B4 B7 B10 B13	GND	Drain Wires	GND	A1 A4 A7 A10 A13 A16 B1 B4 B7 B10 B13
A2	PETp0	Differential Pair	PERp0	B2
A3	PETn0	Differential Pair	PERn0	B3
A5	PETp1	Differential Pair	PERp1	B5
A6	PETn1		PERn1	B6

Pin #	Cable Side 1		Cable Side 2	Pin #
A8	PETp2	Differential Pair	PERp2	B8
A9	PETn2		PERn2	B9
A11	PETp3	Differential Pair	PERp3	B11
A12	PETn3		PERn3	B12
A14	CREFCLK+	Differential Pair	CREFCLK+	A14

A15	CREFCLK		CREFCLK-	A15
A17	SB_RTN	Hook-up Wire	SB_RTN	A17
A18	CPRSNT#	Hook-up Wire	CPRSNT#	A18
A19	CPWRON	Hook-up Wire	CPWRON	A19
B2	PERp0	Differential Pair	PETp0	A2
B3	PERn0		PETn0	A3
B5	PERp1	Differential Pair	PETp1	A5
B6	PERn1		PETn1	A6
B8	PERp2	Differential Pair	PETp2	A8
B9	PERn2		PETn2	A9
B11	PERp3	Differential Pair	PETp3	A11
B12	PERn3		PETn3	A12
B14	PWR	NC	PWR	B14
B15	PWR	NC	PWR	B15
B16	PWR_RTN	NC	PWR_RTN	B16
B17	PWR_RTN	NC	PWR_RTN	B17
B18	CWAKE#	Hook-up Wire	CWAKE#	B18
B19	CPERST#	Hook-up Wire	CPERST#	B19
Backshell	Chassis Ground	Overall Cable Braid	Chassis Ground	Backshell

4. Ordering Information

OSS-ECA-x4

Related products

KIT-EXP-2000- The expansion adapter kit with PCIe x4 Gen 1 host interface board (HIB2), PCIe x4 expansion cable adapter (ECA) with x16 connector, and PCIe x4 cable.